

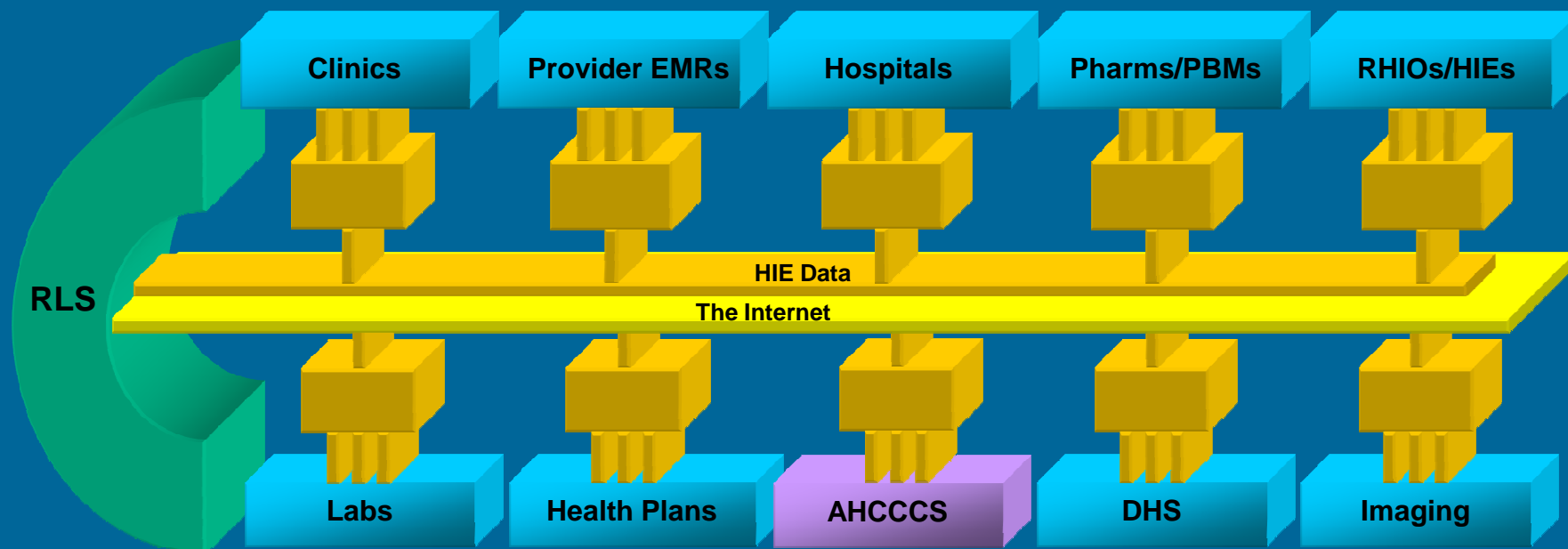


AHCCCS Health Information Exchange and Electronic Health Record Utility Phase I Technical Overview

The HleHR Utility Project
April 2008



Conceptual View of AHCCCS HIE

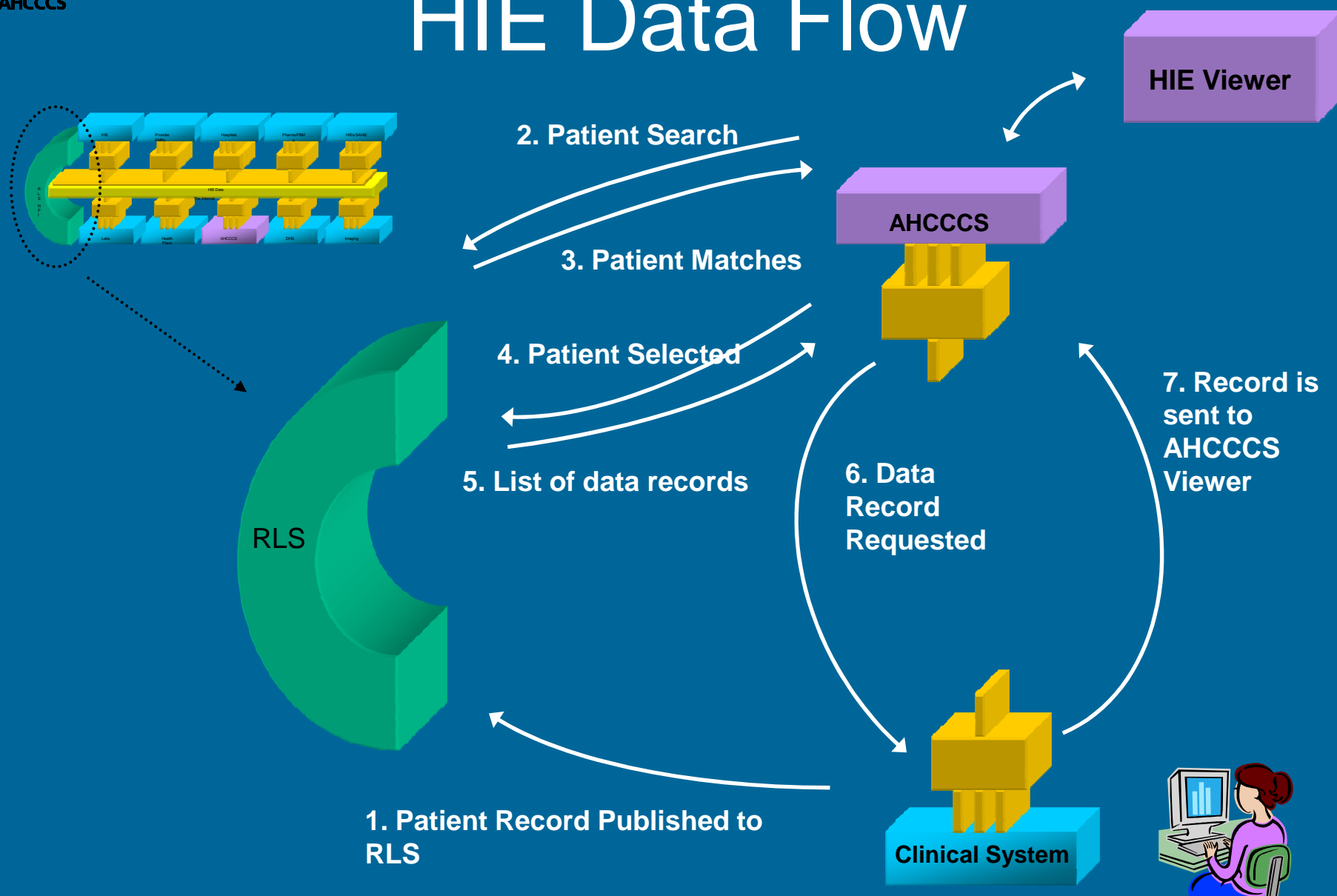


- Gateways



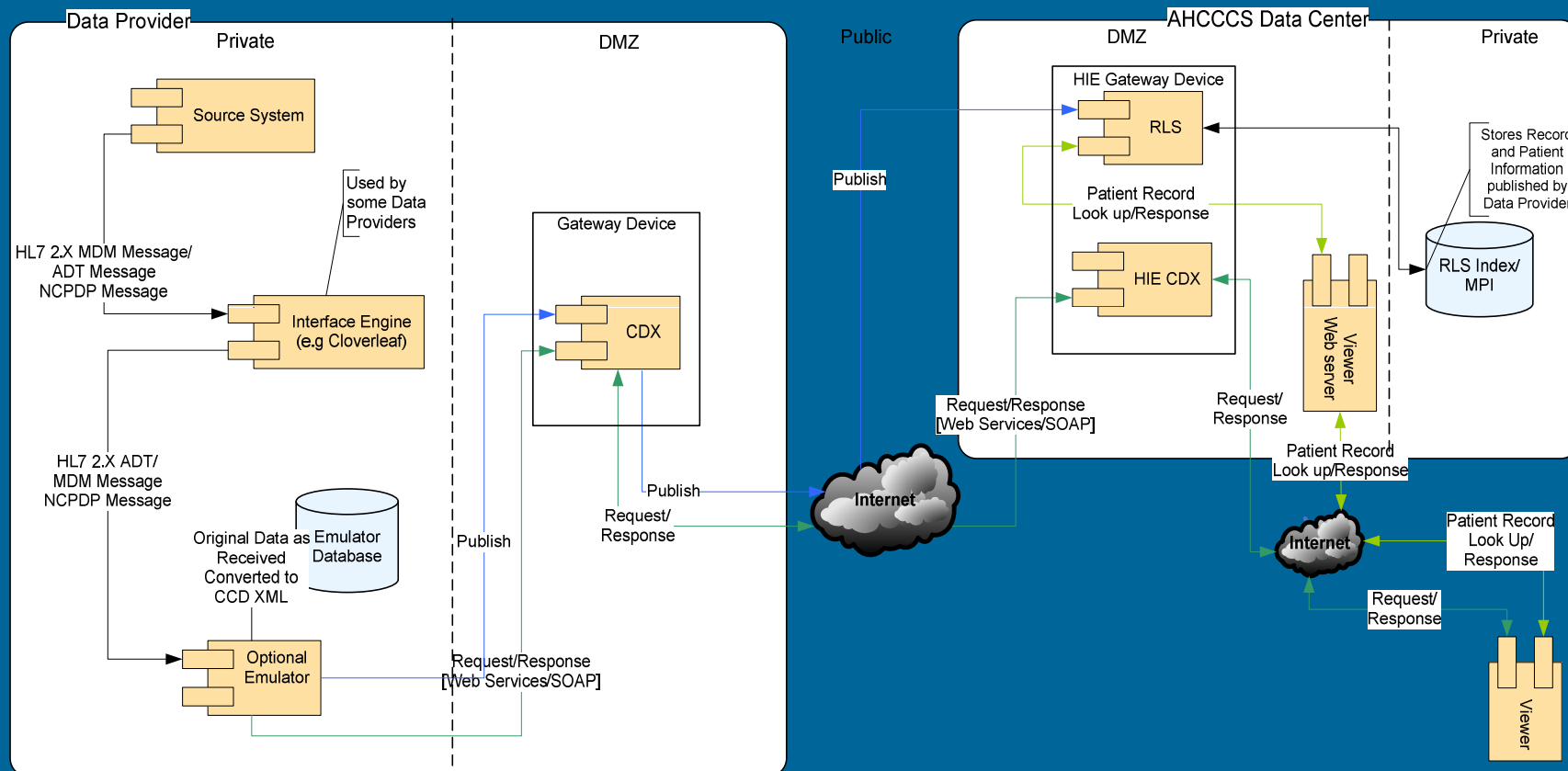
- Record Locator Service (record matching)

HIE Data Flow





HIE Architecture







AHCCCS Test System Viewer Login

Viewer Login - Microsoft Internet Explorer

File Edit View Favorites Tools Help

Back Forward Stop Reload Home Search Favorites

Address <http://svhieqat01/HIEViewer/Default.aspx> Go Links

 AHCCCS Health Information Exchange Viewer 

Viewer Login

USER LOGIN

User Name:

Password:

- **Change your password?**
If you wish to change your password, CLICK [Change Password](#)
- **Not registered yet?**
Call the Operations Support team [1-800-555-1234](tel:1-800-555-1234)
- **Having problems logging in?**
Call the Operations Support team [1-800-555-1234](tel:1-800-555-1234)

Disclaimer

This system is restricted to use by authorized providers and their representatives for the purposes of securing health care information for patient treatment. The State of Arizona strictly prohibits unauthorized access, use or modification of this system or its content. Unauthorized usage and/or users are subject to disciplinary proceedings and/or criminal and civil penalties under State, Federal or other applicable domestic and foreign laws. The use of this system may be monitored and recorded for administrative and security reasons. Anyone accessing this system expressly consents to such monitoring and is advised that if monitoring reveals possible evidence of criminal activity, the State of Arizona may provide evidence of such activity to law enforcement officials. All users must comply with the terms of the Participation Agreement and applicable laws and regulations regarding Personally Identifying Information (PII), Personal Health Information (PHI), HIPAA and security policies regarding the protection of the State of Arizona information assets. Please remember that sharing account logins is prohibited. You must not share your user name and password with any

Done Local intranet

Information/Links include:

- Password change
- AHCCCS/Viewer Registration
- Customer Support
- Disclaimer



AHCCCS Test System

Patient Search: By Name

Patient Search - Microsoft Internet Explorer

File Edit View Favorites Tools Help

Back Forward Stop Home Search Favorites Refresh Print Mail New Window

Address <http://svhieqat01/HIEViewer/secure/frmViewer.aspx> Go Links

AHCCCS Health Information Exchange Viewer

Viewer Login > Patient Search Logged In: Kelly, Mary [Log out](#) [Help](#)

NAME SEARCH AHCCCS ID SEARCH

Last Name: First Name:

☐ Click here if Last Name is less than 4 letters. ☐ Click here if First Name is less than 2 letters.

Date of Birth: Gender:

At least three fields are required.

Done Local intranet

3 of 4 criteria required:

- First Name
- Last Name
- Gender
- DOB





AHCCCS Test System

Results Displayed

Patient Search - Microsoft Internet Explorer

File Edit View Favorites Tools Help



Address <http://svhieqat01/HIEViewer/secure/frmViewer.aspx> Go Links >>

 AHCCCS Health Information Exchange Viewer 

Viewer Login > Patient Search Logged In: Kelly, Mary [Log out](#) [?](#) [Help](#)

NAME SEARCH AHCCCS ID SEARCH

Last Name: First Name:
☐ Click here if Last Name is less than 4 letters. ☐ Click here if First Name is less than 2 letters.

Date of Birth:  Gender: 

At least three fields are required.

Patient Search Results:

Sel	AHCCCS ID	Last Name	First Name	MI	Date of Birth	Gender	SSN(4)	Address	City	State
<input type="checkbox"/>	A12343333	JAMES	DEANNA		03/01/1969	F	0175	999 HAPPY LANE	CAVE CREEK	AZ
<input type="checkbox"/>	A12341111	JAMES	DEBBIE	T	03/01/1969	F	4633	123 MAIN STREET,APT 2	PHOENIX	AZ
<input type="checkbox"/>	A12342222	JAMES	DENNIS	X	03/01/1969	M	9444	321 CENTRAL AVE,#10-B	GLENDALE	AZ

Local intranet



AHCCCS Test System

Patient Search: By AHCCCS ID

Patient Search - Microsoft Internet Explorer

File Edit View Favorites Tools Help

Address http://svhieqat01/HIEViewer/secure/frmViewer.aspx Go Links >>

AHCCCS Health Information Exchange Viewer

Viewer Login > Patient Search Logged In: Kelly, Mary [Log out](#) [Help](#)

NAME SEARCH **AHCCCS ID SEARCH**

Last Name:
☐ [Click here if Last Name is less than 4 letters.](#)

AHCCCS ID: * **AND OR**

Date of Birth:

Find **Clear**

**Fields are Mandatory*
Note: Last name or date of birth must be entered in addition to the AHCCCS ID

**Quick Search when
AHCCCS ID is known.
Requires one additional
field.**



AHCCCS Test System

Results Displayed

Patient Search - Microsoft Internet Explorer

File Edit View Favorites Tools Help

Address <http://svhieqat01/HIEViewer/secure/frmViewer.aspx> Go Links

AHCCCS Health Information Exchange Viewer

Viewer Login > Patient Search Logged In: Kelly, Mary [Log out](#) [Help](#)

NAME SEARCH AHCCCS ID SEARCH

Last Name:

☐ [Click here if Last Name is less than 4 letters.](#)

AHCCCS ID: * AND OR

Date of Birth:

*Fields are Mandatory
Note: Last name or date of birth must be entered in addition to the AHCCCS ID

Select a Patient for Viewing

Patient Search Results:

Sel	AHCCCS ID	Last Name	First Name	MI	Date of Birth	Gender	SSN(4)	Address	City	State
<input type="checkbox"/>	A12341111	JAMES	DEBBIE	T	03/01/1969	F	4633	123 MAIN STREET,APT 2	PHOENIX	AZ





AHCCCS Test System

Patient Details Displayed: Filter Records

Patient Records - Microsoft Internet Explorer

File Edit View Favorites Tools Help

Address <http://svhieqat01/HIEViewer/secure/frmPatientRecords.aspx> Go Links >>

 AHCCCS Health Information Exchange Viewer 

[Viewer Login](#) > [Patient Search](#) > Patient Records Logged In: Kelly, Mary [Log out](#) [Help](#)

Filter Criterion

Select your Record Type:

All
Discharge Summary
Lab Report
Medication History

Select Dates: ☐ Time Period

All

☐ Date Range From:

(mm/dd/yyyy)

 To:

(mm/dd/yyyy)

Options to Filter Record Display:

- Record Type
- Date Range



AHCCCS Test System

Patient Details Displayed: Filter Records

PATIENT RECORDS

Last Name: **JAMES** First Name: **DEBBIE** MI: **T** Date of Birth: **03/01/1969**
Gender: **F** AHCCCS Id: **A12341111** Last 4 digits of SSN: **4633**
Address: **123 MAIN STREET APT 2 PHOENIX AZ 85001**

<u>Sel</u>	<u>Record Type</u>	<u>Date of Service</u>	<u>Source</u>	<u>Category</u>	<u>Record Descriptor</u>
<input checked="" type="checkbox"/>	Discharge Summary	09/07/2007	AHCCCS	A	Discharge Summary
<input checked="" type="checkbox"/>	Lab Report	04/15/1990	AHCCCS	A	Lab Report
<input checked="" type="checkbox"/>	Medication History	10/01/2000	AHCCCS	A	Medication History

Details displayed for Selected Patient(s)

- Demographics
- Records Available via Viewer
 - Sort columns – click on header
- Select up to 5 records for viewing



AHCCCS Test System

Select Multiple Patients

Patient Search - Microsoft Internet Explorer

Address: http://svhieqat01/HIEViewer/secure/frmViewer.aspx

AHCCCS Health Information Exchange Viewer

Viewer Login > Patient Search

Logged In: Kelly, Mary [Log out](#)

NAME SEARCH | AHCCCS ID SEARCH

Last Name: First Name:

☐ Click here if Last Name is less than 4 letters. ☐ Click here if First Name is less than 2 letters.

Date of Birth: Gender:

[Find](#) [Clear](#)

At least three fields are required.

Patient Search Results:

Sel	AHCCCS ID	Last Name	First Name	MI	Date of Birth	Gender	SSN(4)	Address	City	State
<input checked="" type="checkbox"/>	A95195195	SMITH	BOB		05/15/1970	M	0444	123 KELLER LANE	PHOENIX	AZ
<input checked="" type="checkbox"/>	A95195196	SMITHE	ROBERT		05/15/1970	M	0444	123 KELLER LANE	PHOENIX	AZ

[Uncheck All](#) [Retrieve Patients](#)

Two Patient records are same person

Select both for viewing together



AHCCCS Test System

Patient Details Displayed

Patient Records - Microsoft Internet Explorer

File Edit View Favorites Tools Help Links

AHCCCS

Viewer Login > Patient Search > Patient Records Logged In: Kelly, Mary Log out

Filter Criterion

Select your Record Type: All
Discharge Summary
Lab Report
Medication History

Select Dates: ☐ Time Period All ☐ Date Range From: (mm/dd/yyyy) To: (mm/dd/yyyy)

Apply Filter Clear

PATIENT RECORDS

Last Name: SMITH First Name: BOB MI: Date of Birth: 05/15/1970
Gender: M AHCCCS Id: A95195195 Last 4 digits of SSN: 0444
Address: 123 KELLER LANE PHOENIX AZ 86413

Sel	Record Type	Date of Service	Source	Category	Record Descriptor
<input type="checkbox"/>	Discharge Summary	05/11/2002	AHCCCS	A	Discharge Summary
<input type="checkbox"/>	Lab Report	11/01/2001	AHCCCS	A	Lab Report
<input type="checkbox"/>	Medication History	05/11/2002	AHCCCS	A	Medication History

Last Name: SMITHE First Name: ROBERT MI: Date of Birth: 05/15/1970
Gender: M AHCCCS Id: A95195196 Last 4 digits of SSN: 0444
Address: 123 KELLER LANE PHOENIX AZ 86413

Sel	Record Type	Date of Service	Source	Category	Record Descriptor
<input type="checkbox"/>	Discharge Summary	07/21/1992	AHCCCS	A	Discharge Summary
<input type="checkbox"/>	Lab Report	09/27/2007	AHCCCS	A	Lab Report
<input type="checkbox"/>	Medication History	03/01/2008	AHCCCS	A	Medication History

Done Local intranet

Details for both
Patients displayed



AHCCCS Test System

Patient Details Displayed: Filter On

Patient Records - Microsoft Internet Explorer

File Edit View Favorites Tools Help Links

AHCCCS Health Information Exchange Viewer

Viewer Login > Patient Search > Patient Records Logged In: Kelly, Mary Log out

Filter Criterion

Select your Record Type: All Discharge Summary Lab Report Medication History

Select Dates: Time Period All Date Range From: (mm/dd/yyyy) To: (mm/dd/yyyy)

Apply Filter Clear

PATIENT RECORDS

Last Name: SMITH First Name: BOB MI: Date of Birth: 05/15/1970
Gender: M AHCCCS Id: A95195195 Last 4 digits of SSN: 0444
Address: 123 KELLER LANE PHOENIX AZ 86413

Sel	Record Type	Date of Service	Source	Category	Record Descriptor
<input type="checkbox"/>	Discharge Summary	05/11/2002	AHCCCS	A	Discharge Summary

Last Name: SMITHE First Name: ROBERT MI: Date of Birth: 05/15/1970
Gender: M AHCCCS Id: A95195196 Last 4 digits of SSN: 0444
Address: 123 KELLER LANE PHOENIX AZ 86413

Sel	Record Type	Date of Service	Source	Category	Record Descriptor
<input type="checkbox"/>	Discharge Summary	07/21/1992	AHCCCS	A	Discharge Summary

Local intranet

Only Discharge
Summaries Displayed



AHCCCS Test System

View Record Detail

Record Viewer - Microsoft Internet Explorer

File Edit View Favorites Tools Help

Back Forward Stop Home Search Favorites Refresh Print Mail Word Excel PowerPoint

Address http://svhieqat01/HIEViewer/secure/frnDisplayData.aspx Go

AHCCCS AHCCCS Health Information Exchange Viewer ARIZONA @YOUR SERVICE

Patient Records > Patient Record Viewer Logged In: Kelly, Mary Log out Help

Sort By: Date of Service Close All Popups

SMITH, BOB Lab Report 11/1/2001 12:00:00 AM	
SMITH, BOB Discharge Summary 5/11/2002 12:00:00 AM	
SMITH, BOB Medication History 5/11/2002 12:00:00 AM	

Patient Name: SMITH, BOB MRN: 06264410 DOB: 5/15/1970 Gender: M

Discharge Summary

Created On: May 11, 2002

Patient:	BOB SMITH , Sr	MRN:	XXXXXXX
Birthdate:	May 15, 1970	Sex:	Male
Guardian:	Kenneth Ross 17 Daws Rd.	Next of Kin:	Henrietta Levin tel:(999)555-1212

Indicator shows when record is being retrieved and not yet available. Changes to document icon when retrieval is complete.

First record returned is selected in list and displayed in right panel. Click in list to change display.

Records listed chronologically.



AHCCCS Test System

View Record Detail

Record Viewer - Microsoft Internet Explorer

File Edit View Favorites Tools Help

Back Forward Stop Home Search Favorites Refresh Print Mail W Word PDF Go

Address http://svhieqat01/HIEViewer/secure/frmDisplayData.aspx

AHCCCS Health Information Exchange Viewer

ARIZONA @YOUR SERVICE

Patient Records > Patient Record Viewer Logged In: Kelly, Mary Log out

Sort By: Date of Service Close All Popsups

SMITH, BOB
Lab Report
11/1/2001 12:00:00 AM

SMITH, BOB
Discharge Summary
5/11/2002 12:00:00 AM

SMITH, BOB
Medication History
5/11/2002 12:00:00 AM

Patient Name: SMITH, BOB MRN: 06264410 DOB: 5/15/1970 Gender: M

Discharge Summary

Created On: May 11, 2002

Patient:	BOB SMITH , Sr	MRN:	XXXXXXX
Birthdate:	May 15, 1970	Sex:	Male
Guardian:	Kenneth Ross 17 Daws Rd. Blue Bell, MA, 02368 tel:(888)555-1212	Next of Kin:	Henrietta Levin tel:(999)555-1212

Red x allows closure of retrieved records.

Print icon available for printing to local printer.



AHCCCS Test System

Navigation: Return to Record List

Patient Records - Microsoft Internet Explorer

File Edit View Favorites Tools Help

Address <http://svhieqat01/HIEViewer/secure/frmPatientRecords.aspx> Go Links

AHCCCS

Viewer Login > Patient Search > Patient Records Logged In: Kelly, Mary [Log out](#)

[Help](#)

Filter Criterion

Select your Record Type:
Discharge Summary
Lab Report
Medication History

Select Dates: ☐ Time Period
☐ Date Range From: To:

PATIENT RECORDS

Last Name: **SMITH** First Name: **BOB** MI: Date of Birth: **05/15/1970**
Gender: **M** AHCCCS Id: **A95195195** Last 4 digits of SSN: **0444**
Address: **123 KELLER LANE PHOENIX AZ 86413**

Sel	Record Type	Date of Service	Source	Category	Record Descriptor
<input checked="" type="checkbox"/>	Discharge Summary	05/11/2002	AHCCCS	A	Discharge Summary
<input type="checkbox"/>	Lab Report	11/01/2001	AHCCCS	A	Lab Report
<input type="checkbox"/>	Medication History	05/11/2002	AHCCCS	A	Medication History

GREEN Record has been previously retrieved and is Open.
YELLOW Record has been previously retrieved and Closed.

Records remaining open are highlighted in green.

Records closed, but previously viewed are highlighted in yellow

No "re-retrieval" of open records occurs.



AHCCCS Test System

Multiple Pop-ups Open

The screenshot shows a web browser with multiple overlapping windows. The top window is titled "SMITH, BOB - 5/11/2002 12:00:00 AM - Discharge Summary - Discharge Summary - Microsoft Int...". It displays patient information: Patient Name: SMITH, BOB, MRN: 06264410, DOB: 5/15/1970, Gender: M. The title "Discharge Summary" is centered, followed by "Created On: May 11, 2002". Below this, patient details are listed: Patient: BOB SMITH, Sr, MRN: XXXXXXXX, Birthdate: May 15, 1970, Sex: Male. The bottom window is titled "SMITHE, ROBERT - 7/21/1992 12:00:00 AM - Discharge Summary - Discharge Summary - Microsoft Internet Expl...". It displays patient information: Patient Name: SMITHE, ROBERT, MRN: 06264410, DOB: 5/15/1970, Gender: M. The title "Discharge Summary" is centered, followed by "Created On: July 21, 1992". Below this, patient details are listed: Patient: ROBERT SMITHE, Sr, MRN: XXXXXXXX, Birthdate: May 15, 1970, Sex: Male, Guardian: Kenneth Ross, Next of Kin: Henrietta Levin, 17 Daws Rd., Blue Bell, MA, 02368, tel:(888)555-1212, tel:(999)555-1212.

Record Viewer - Microsoft Internet Explorer
File Edit View Favorites Tools H
Back Forward Stop Home
Address http://svhieqat01/HIEViewer/se
AHCCCS
Patient Records > Patient Record
Sort By:
SMITH, B
Lab Rep
11/1/20
SMITH, B
Discharg
5/11/20
SMITHE, R
Discharg
7/21/19
SMITHE, R
Lab Rep
9/27/20

SMITH, BOB - 5/11/2002 12:00:00 AM - Discharge Summary - Discharge Summary - Microsoft Int...

Patient Name: SMITH, BOB MRN: 06264410 DOB: 5/15/1970 Gender: M

Discharge Summary

Created On: May 11, 2002

Patient: BOB SMITH, Sr MRN: XXXXXXXX
Birthdate: May 15, 1970 Sex: Male

SMITHE, ROBERT - 7/21/1992 12:00:00 AM - Discharge Summary - Discharge Summary - Microsoft Internet Expl...

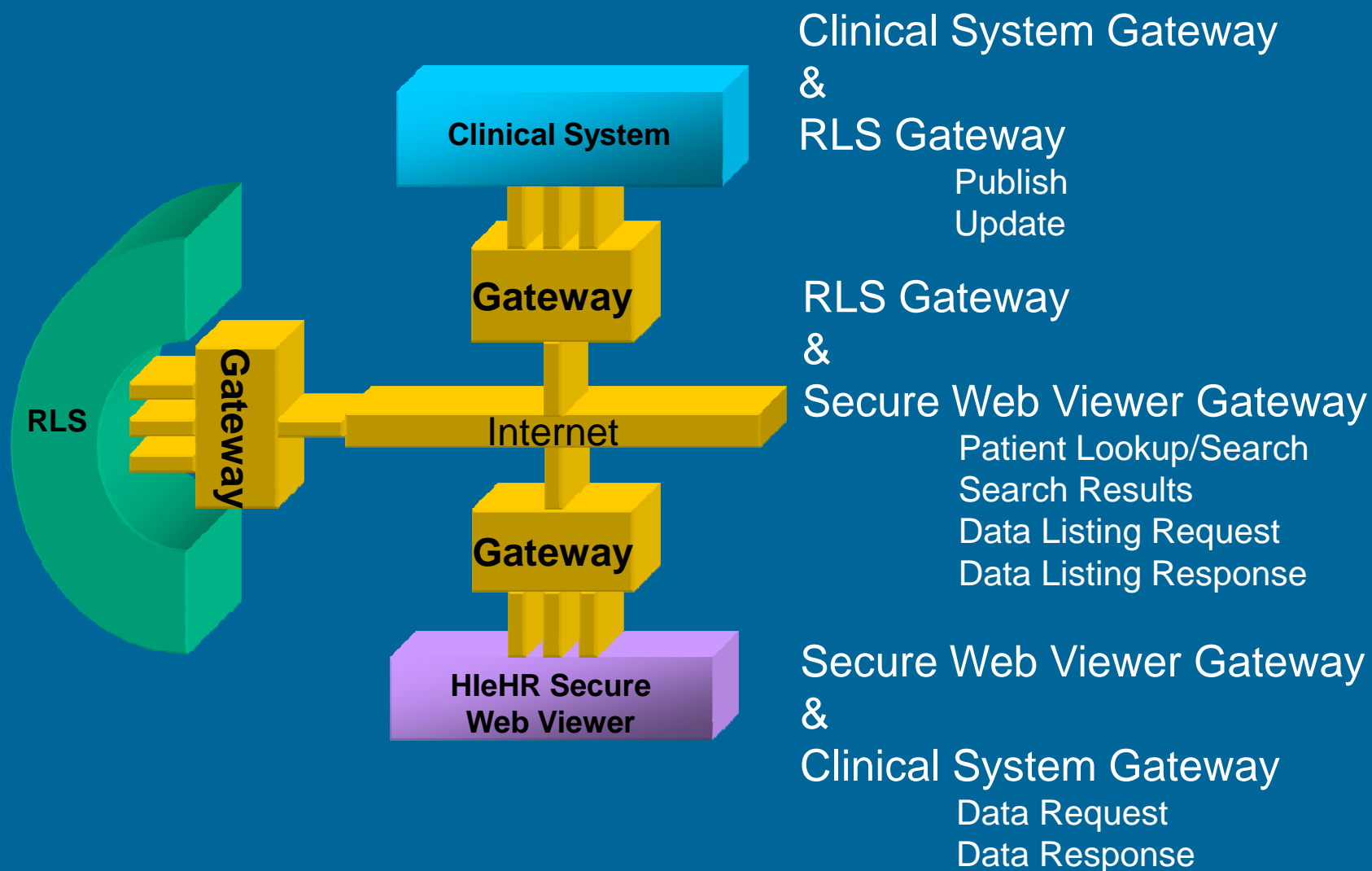
Patient Name: SMITHE, ROBERT MRN: 06264410 DOB: 5/15/1970 Gender: M

Discharge Summary

Created On: July 21, 1992

Patient: ROBERT SMITHE, Sr MRN: XXXXXXXX
Birthdate: May 15, 1970 Sex: Male
Guardian: Kenneth Ross Next of Kin: Henrietta Levin
17 Daws Rd. tel:(999)555-1212
Blue Bell, MA, 02368
tel:(888)555-1212

HIE Messages





HleHR Utility Web Services

- Clinical System Gateway and RLS Gateway
 - Publish
 - Clinical System informs RLS of data record
 - meta-data, identifies patient, indicates type of record
 - Update
 - Indicates Changes to previously published records



HleHR Utility Web Services

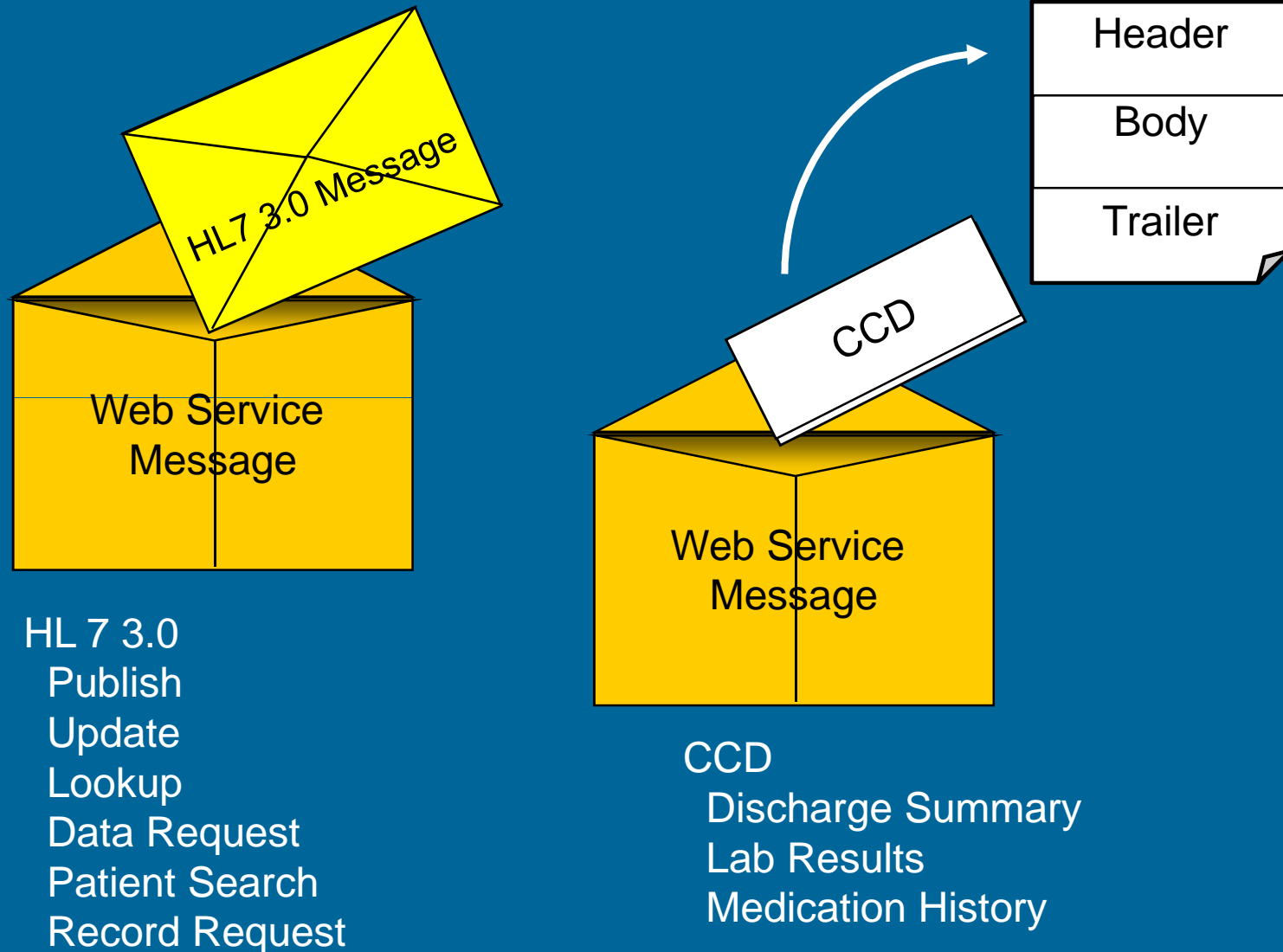
- RLS Gateway and Secure Web Viewer Gateway
 - Patient Lookup/Search
 - Secure Web Viewer Gateway submits search criteria to RLS Gateway
 - Patient Search Results
 - RLS Gateway returns matching patients to Secure Web Viewer Gateway
 - Data List Request
 - Secure Web Viewer Gateway submits request for patient data record listing to RLS Gateway
 - Data Listing Response
 - RLS Gateway returns patient data record listing to Secure Web Viewer Gateway



HleHR Utility Web Services

- Secure Web Viewer Gateway and Clinical System Gateway
 - Data Request
 - Secure Web Viewer Gateway submits request for specific data record to Clinical System Gateway
 - Data Response
 - Clinical System Gateway returns specific data record to Secure Web Viewer Gateway

HIE Message Structure





AHCCCS Strategy for Using CCD

Levels of Encoding

- Level of data encoding may vary among AHCCCS HIE participants
- Custom markup can augment CCD markup
- AHCCCS will provide
 - data partner implementation guide
 - business rules
 - data elements
 - xml



CCD Structure

- XML document
 - header
 - body
- Header identifies patient, provider, document type, originating organization
- Body has a
 - human-readable section
 - Human-readable part is attested and contains complete content
 - Either XML or any MIME encoded BLOB e.g. *.doc, *.pdf, *.tif
 - encoded section
 - if present, can be safely ignored by recipients unable to process it

Discharge Letter

DEPARTMENT OF PAEDIATRICS

Direct Line 01942 2644170

Fax Number 01942 2644176

02/06/2003

DR FOSTER

THE GP PRACTICE
999 WIGAN LANE
WIGAN, WN1 1XX

Dear: Doctor

RE: **TEST1 GEORGE W**

DOB 11/11/2000 **NHS No** 999 999 9999, **PAS No** 889900
THE HOUSE,
STREET ST,
WETHERFIELD,
WIGAN
WN1 2XX.

Admission Details: 2/7 ago he was admitted with croup
He came back with fever, coryzal symptoms
and congested tonsils
He was started on penicilline

Admission Date/Time: 24/09/2003 from UPPER JOHNSON WARD, RAEI

Discharge Date: 25/09/2003 from UPPER JOHNSON WARD, RAEI

Discharging Consultant: DR RG LEVY

Primary Diagnosis: Acute upper respiratory infection

Secondary Diagnosis:

Patient Weight (Kg): 17.9 kg

Discharge Medication

PHENOXYMETHYLPENICILLIN 125mg/5mL SOLUTION 7 day(s) supply 125m

Other Medication

Follow Up:

No Follow Up

Planned Investigation(s)

Yours sincerely,

Vassiliki Mitsiadi
SHO

Header

- Document Type
- Sender
- Receiver
- Patient

Body

Section(s)

T
E
X
T

- Admission Details
- Primary/Secondary Diagnosis
- Observations
- Medications
- Follow-up

C
O
D
E
D

Entries

- Admission Details
- Primary/Secondary Diagnosis
- Observations
- Medications

Sample components of CCD

<ClinicalDocument>

Header

...

<structuredBody>

<section>

<text>...</text>

Narrative Block

<observation>...</observation>

<substanceAdministration>

<supply>...</supply>

</substanceAdministration>

</section>

<section>...</section>

</structuredBody>

</ClinicalDocument>

ENTRIES

SECTIONS

BODY

DOCUMENT



Example of a fully encoded document section

```
<section>

  <title>Vital Signs</title>

  <text>Temperature is 36.9 C</text>

  <entry>
    <observation classCode="OBS" moodCode="EVN">
      <code code="386725007" codeSystem="2.16.840.1.113883.6.96"
        codeSystemName="SNOMED CT" displayName="Body temperature"/>
      <effectiveTime value="200004071430"/>
      <value xsi:type="PQ" value="36.9" unit="Cel"/>
    </observation>
  </entry>

</section>
```



Clinical System and Gateway Communications

Clinical System Physical Location

Preferred Approach

Message Types
Publish
Update
Data Response

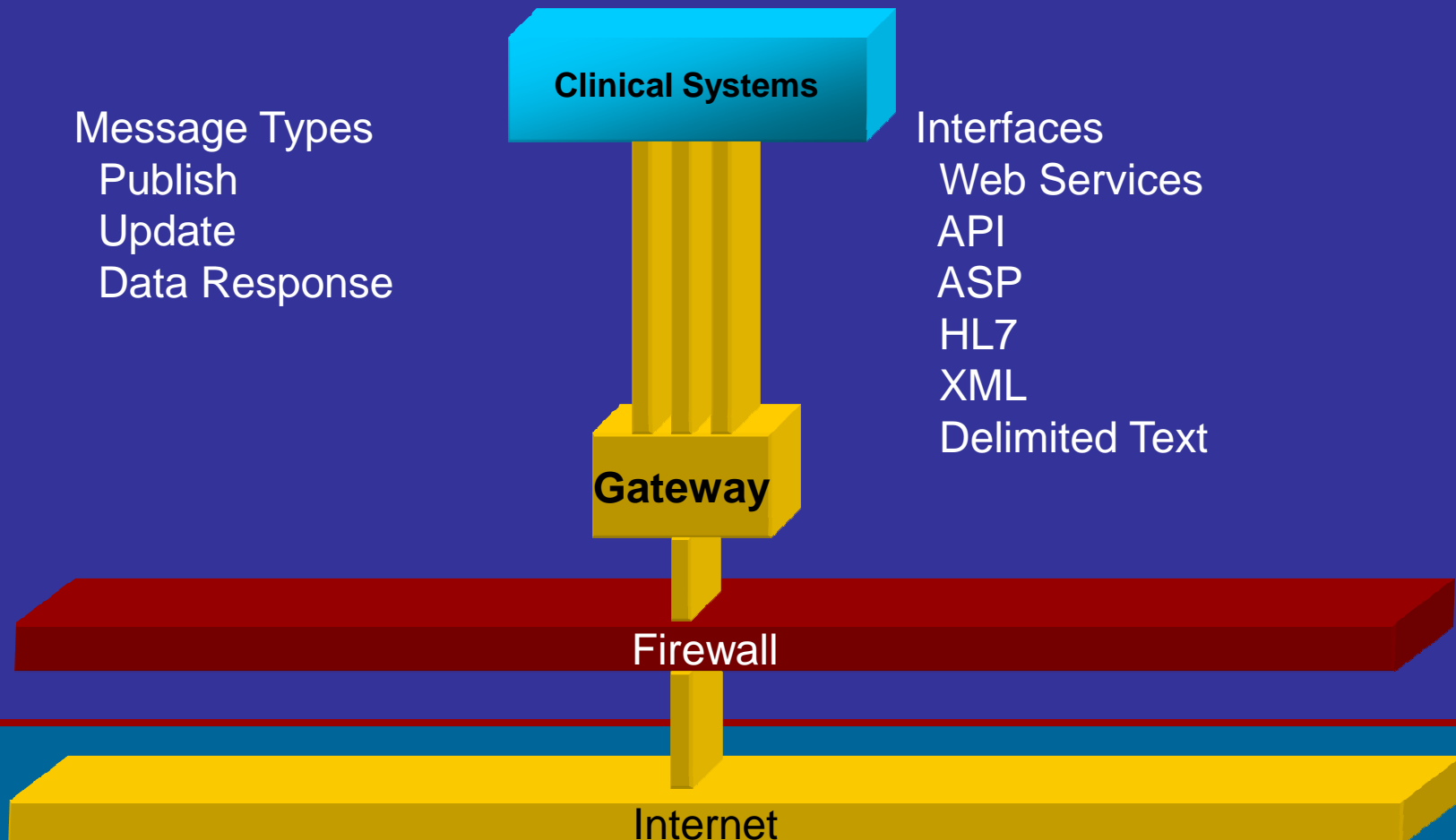
Clinical Systems

Interfaces
Web Services
API
ASP
HL7
XML
Delimited Text

Gateway

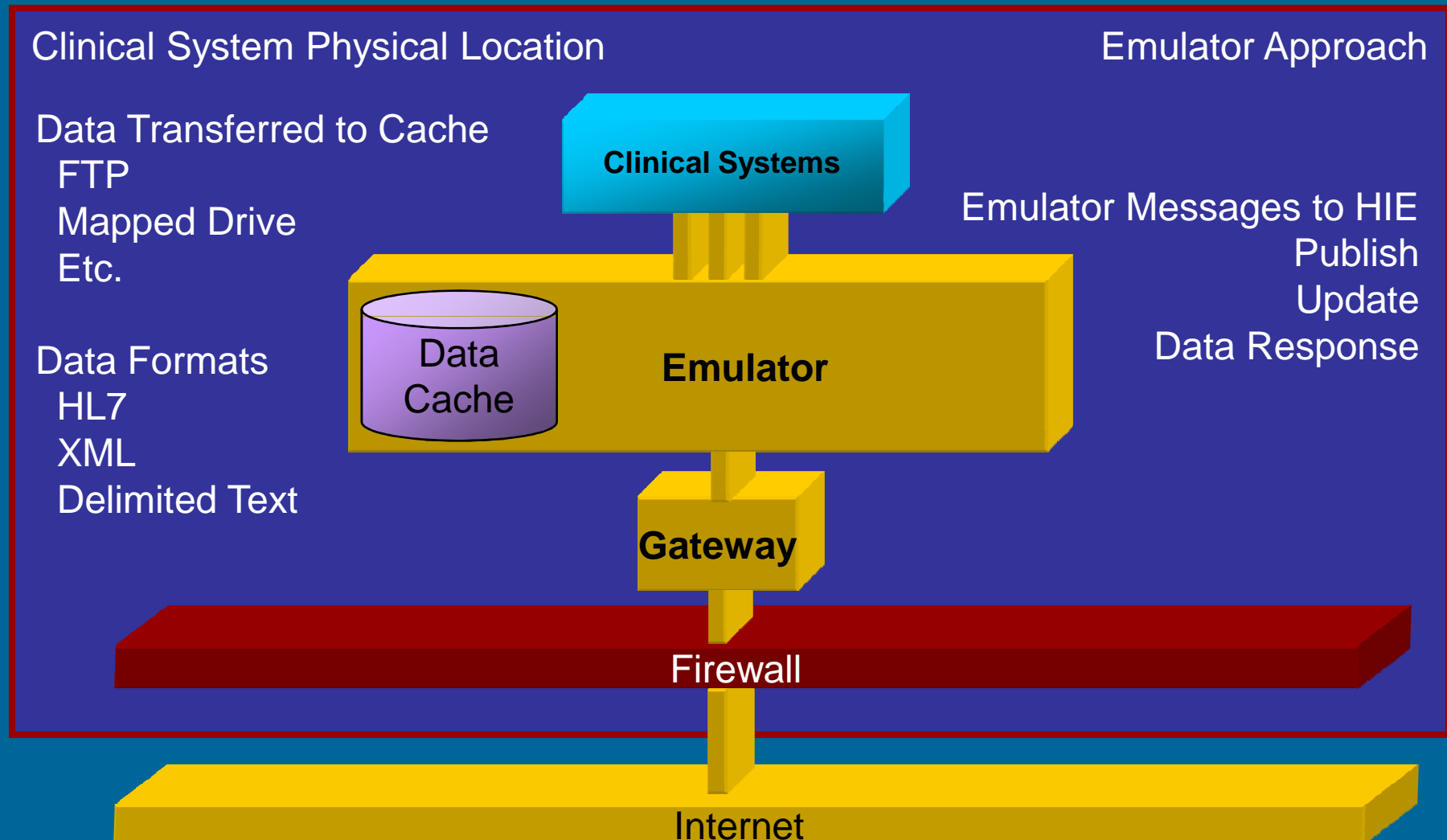
Firewall

Internet



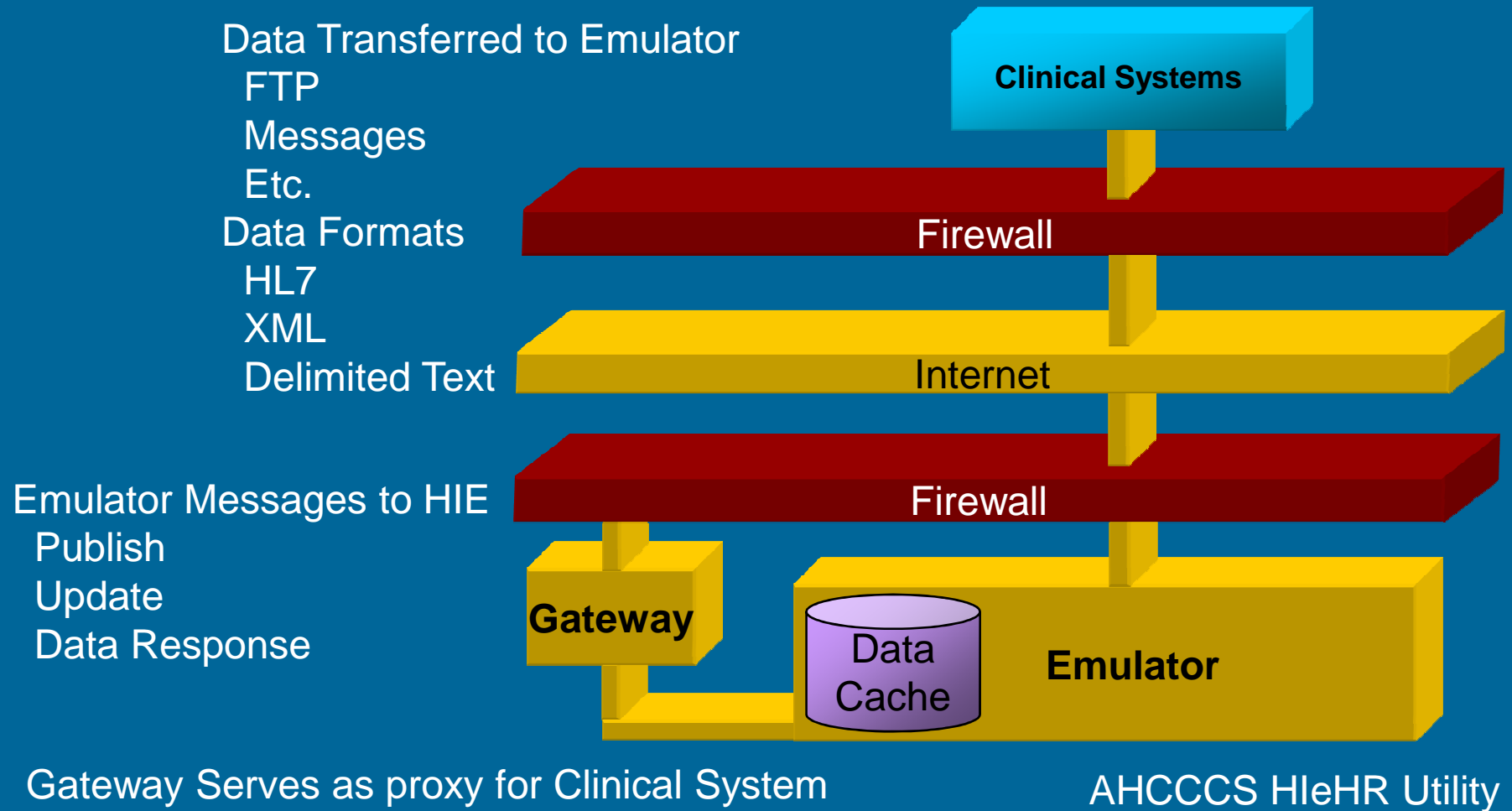


Clinical System and Gateway Communications



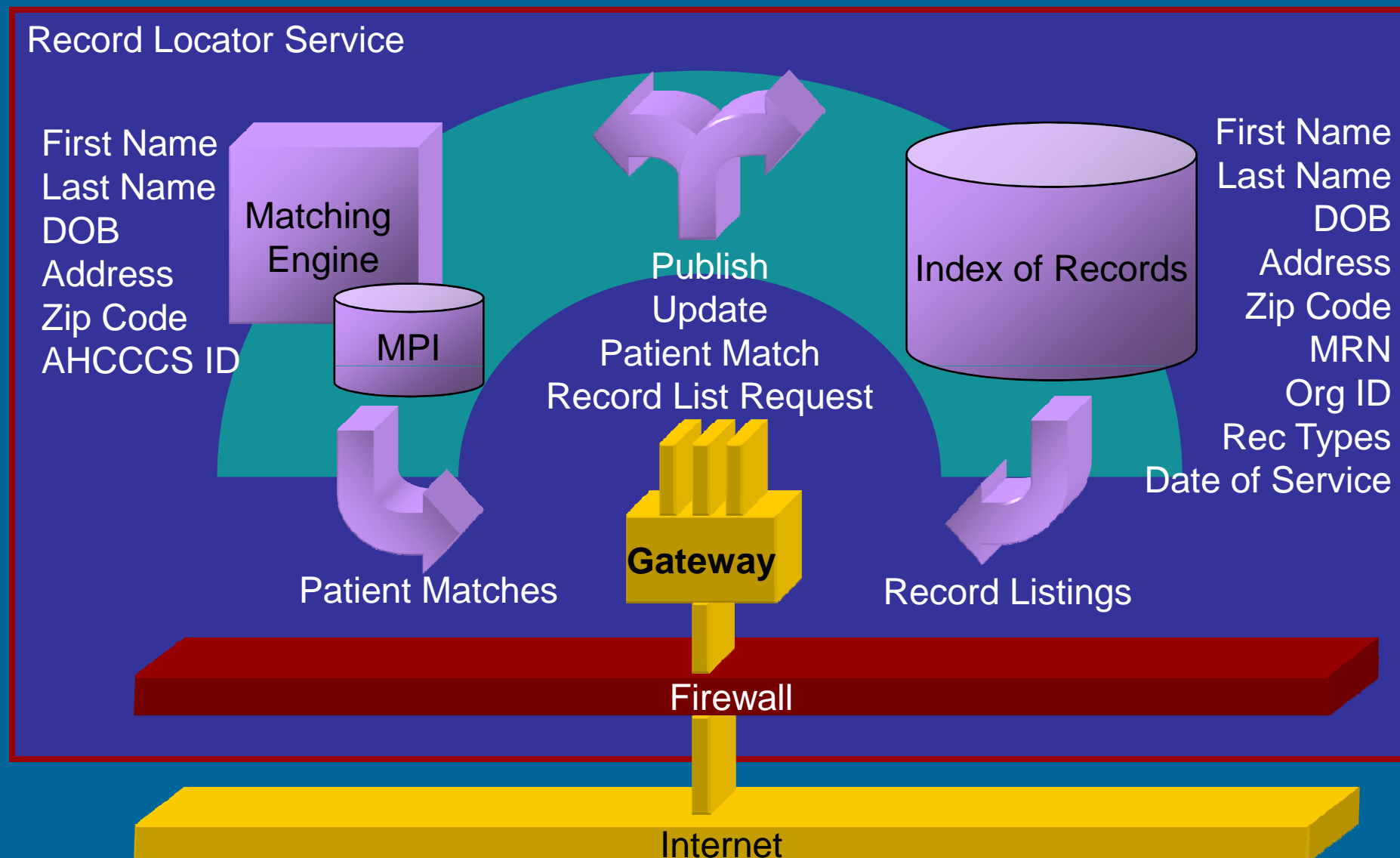


Clinical System and Gateway Communications



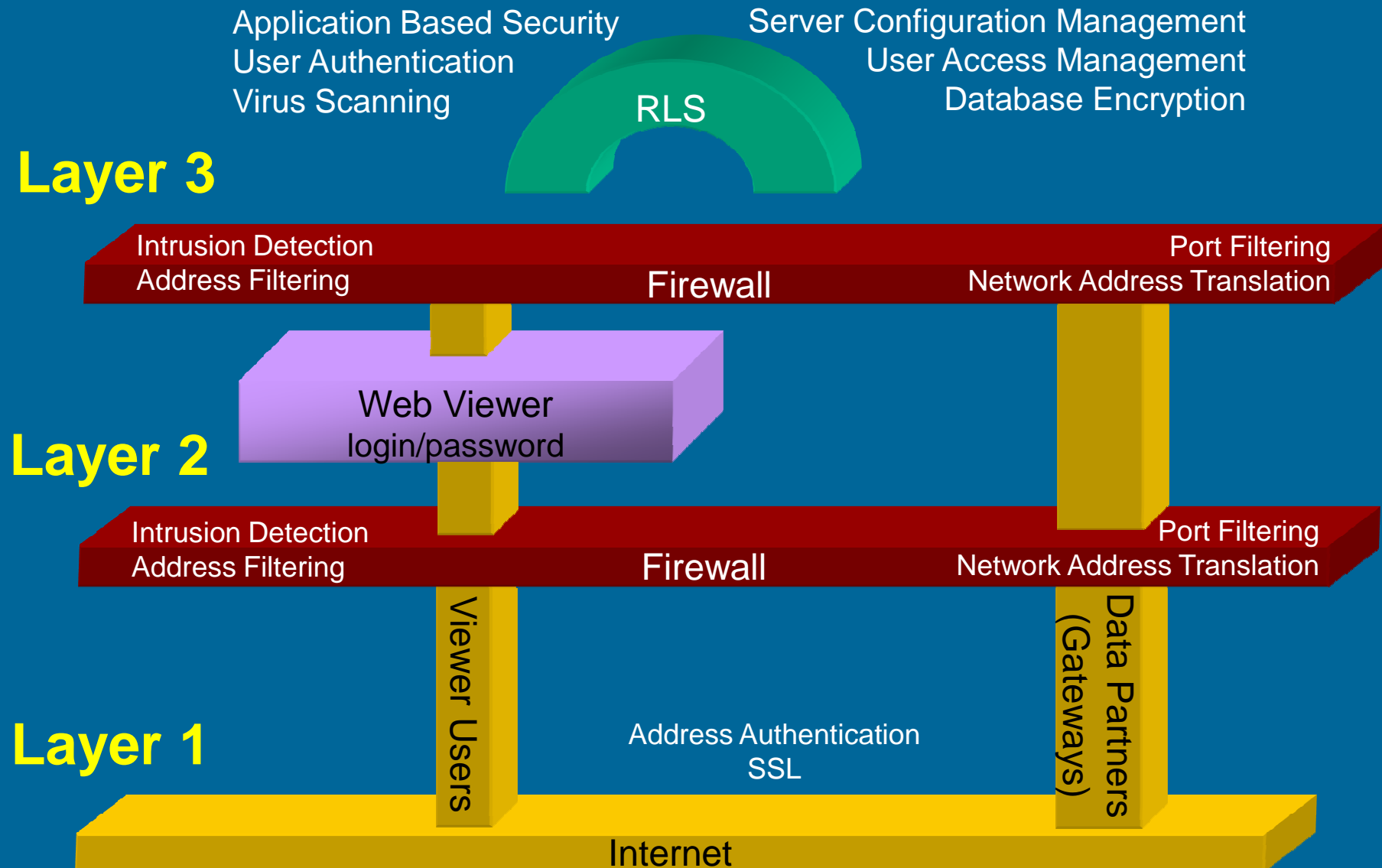


RLS Architecture





'Defense in Depth' Security





AHCCCS

Our first care is your healthcare